

Appl. No. : 10/780,502
Filed : February 17, 2004

REMARKS

Claims 1 – 20 are pending in the application. Claim 4 has been cancelled.

Claims 1 – 20 stand rejected under 35 USC 112(2). Claims 1 – 10 were rejected for recitation of the phrase “the surrounding medium” for lacking antecedent basis. Claims 1, 10 and 17 and dependent claims have been amended to recite “surrounding liquid medium” which is supported at page 4, paragraph 14, page 11, paragraph 34 and throughout the specification.

Regarding the 112 rejection of the term physiological gas, as is explained throughout the specification, the modifier gas can be a physiological gas. In reference to claim 5 specifically, “physiological gas” has been replaced by “modifier gas”. Claims 7 and 8 do not actually recite the term “physiological gas”. Claim 18 states that the modifier gas may be selected from certain listed gases which are recited throughout the specification. Applicants believe that the claims as amended are acceptable under 35 USC 112(2) and withdrawal of the rejection is respectfully requested.

Claims 1 – 20 stand rejected under 35 USC 102(e) over U.S. Patent No. 5,558,854 (“Quay”). Quay teaches the use of mathematical equations (the “Q coefficient”) to select gases that might be useful for use in contrast agents in ultrasound imaging. In actuality, the equations do not work consistently for the purpose asserted in Quay. Regardless, the applicants respectfully disagree that claims 1 – 20 are anticipated under 35 USC 102(e).

There is no enabling teaching in Quay '854 for microbubbles containing a combination of gasses as stated in applicants' claims. Quay only teaches microbubbles with a single gas. For example, in Examples 1 - 3, Quay teaches a microbubble with decafluorobutane, not a microbubble with a gas mixture. Example 4 simply lists a table of gases and their Q values. Example 5 teaches large microbubbles (100 microns) with the single gases listed in Table V. Example 6 teaches a 2% w/v aqueous dispersion of perfluoropentane and perfluorohexane. When the perfluoropentane dispersion was added to simulated blood (37° C) as taught in Example 6, microbubbles of perfluoropentane would have formed. However, these microbubbles would have contained pure perfluoropentane. When the perfluorohexane dispersion was added to the simulated blood at (37° C), microbubbles of perfluorohexane would not have been produced since perfluorohexane is a liquid at 37° C. Consequently, there is no

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teaching in Example 6 of how to make a microbubble with a mixture of gases.

As stated in the Office Action, applicants acknowledge that claim 6 of the issued Quay patent does mention encapsulated air-filled microspheres where all or a portion of the air is filled with decafluoropentane. However, applicants believe that this claim is not supported by the specification and that the first appearance of this claim occurred in an amendment filed on December 22, 1995 (see Exhibit A), long after the earliest priority date of the present application. The Office Action also mentions that perfluoropentane and perfluorohexane were explicitly mentioned in the Abstract. However, the Abstract was amended to recite "gaseous perfluoropentane and gaseous perfluorohexane" on March 21, 1996, just prior to allowance of the claims (see Exhibit B). Applicant agrees that Table II (and Table IV) mentions perfluorobutane, perfluoropentane and perfluorohexane, but never in combination with a modifier gas as required by the claims.

Applicants were previously in a patent interference with the Quay patent wherein, as a result of the interference, claims 10 - 13 of Quay were invalidated (see Exhibit C for a copy of the opinion) under 35 USC 112(1) for lacking written support. Although not at issue in the interference, in the case of claim 6, there is also no support in the specification for an air filled microbubble suspension wherein all or a portion of the air is replaced with decafluoropentane. Thus, it is applicants' position that the '854 patent in no way teaches microbubbles with mixtures of gases as claimed in applicants' patent and withdrawal of the rejection of claims 1 - 20 over 35 USC 102(e) is respectfully requested.

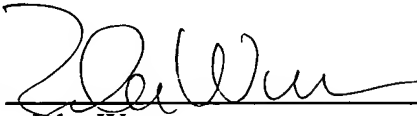
Claims 1 – 20 stand rejected over judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of U.S. Patent Nos. 6,706,253; 5,639,443; and 6,258,339. Because claims 1 – 20 are not yet allowed, applicants respectfully request that the issue of double patenting be revisited after formal allowance of the claims.

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If there are any questions concerning this response, applicants' attorney can be reached at the telephone number stated below.

Respectfully submitted,

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